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# Vulnerable Bodies in Human–Robot Interactions: Embodiment as Ethical Issue in Robot Care for the Elderly

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#### ABSTRACT

The aim of this paper is to investigate the notion of embodiment in robot technologies for eldercare, drawing on the phenomenology of the body and discussions of practical nursing ethics. Reaching beyond dualistic discourse on aging bodies, we aim to develop a new ethical framework in which lived bodies and embodied care practices play a dominant role in interpreting moral values of human care. Developing further the notion of “materialising morality”, we approach robotcare as an embodied care practice that takes place in the “triangle” between caregivers, care receivers and robotics. Taking seriously the idea that touching is crucial for the wellbeing of elderly people, this paper comes to the conclusion that robots can take care of elderly patients, but they can't care about them. Robots are not replacements for caregivers, but they might be designed to help caregivers and clients find more profound embodied interactions.

#### KEYWORDS

Robotics, Ethics, Elderly people, Embodiment, Care practices

## 1. Introduction

Care practices have the potential either to preserve dignity and identity of the elderly or to rob them of a fundamental aspect of their humanity and human rights. Economic pressures keep nursing staff ratios low in elderly care, which has raised concern about the elderly's quality of life (Sherwin and Meghan). Nursing staff do not have enough time to engage in basic bodily care (toileting, dressing, feeding, bathing, etc.), yet better quality interactions between the elderly people and caregivers is also needed. Robotics has been seen as one plausible solution to this emerging dilemma (Coeckelbergh; Sharkey), although a number of scholars have expressed concern about using robots for elder care (Sparrow and Sparrow; Sharkey and Sharkey; Turkle). If robotics does automate some mundane tasks in human care, it is necessary to consider how to arrange mediating interdependencies within care relationships. Even if caregiving were done only partially by automatically functioning robots, robotics would fundamentally re-embodiment relations between caregivers and care receivers and nurses' care practices in elderly care.

In this paper, our purpose is to investigate embodied interaction in robot technologies for eldercare. Our discussion is contextualised within elderly people suffering from dementia and how their care needs are related to receiving human touch and being seen. We propose that tactile–kinaesthetic sensations can simulate and transmit primary feelings of affection, delight, safety and pleasure in human care, as much as insecurity, dejection, humiliation and embarrassment. Recent ethical debates on personhood have focussed attention on the needs of vulnerable, elderly individuals and their dignity and autonomy (Hughes et al.). Illuminating the problems within dualistic discourses on elderly people, we show how such discourses display a lack of understanding of how embodiment and intercorporeality are inherently connected to personhood.

Our theoretical approach is largely drawn from Husserl's and Merleau-Ponty's phenomenological notions of the lived body. In trying to contribute to the conceptualisation of 'roboethics', we consider that a pressing need exists to develop an ethically satisfactory discussion of elderly care in the context of nursing practice (see, e.g., Benner; Kittay and Feder; Tronto). This is a necessary step towards a roboethics that takes seriously the issues of embodiment and embodied practices in robotcare. Reaching beyond a dualistic discourse of aging bodies, we aim to evolve an ethical framework in which lived bodies and embodied care practices play a dominant role in interpreting the moral values of human care.

We approach robotcare as an embodied practice that takes place in the "triangle" between caregivers, care receivers and robotics. Many researchers have categorised three main types of service robots in eldercare: *monitoring robots* that help observe behaviour and health, *assistive robots* that support the elderly and/or their caretakers in daily tasks and *social robots* that provide companionship (e.g., Sharkey and Sharkey). To understand how nursing

tasks incorporate the use of care robotics, we focus on assistive robotics, especially interactive body assistance. Assistive robotics include, for instance, automatic feeding robots, bathtub robots and robots that can pick up and carry humans from a bed to a wheelchair.

This paper begins by outlining why the mind–body dichotomy is relevant to eldercare. We are interested in references made to “bodies” in the context of aging, since it is a complex multifaceted concept that defies simple definition. Following this, we introduce the notion of agency and a phenomenological framework for understanding embodiment. From this, we present a phenomenological framework for the evaluation of service robots and provide an example to illustrate its utility. In so doing, we explore how ethical discussions of human dignity have ignored questions of the embodied subject. Let us now pay particular attention to the ways embodiment disappears behind theoretical models of human rights.

## 2. Dualistic discourses on aging bodies

We are especially interested in the profound ambivalence toward embodiment in discourses on elderly people and their care. In these ethical discourses (e.g., Fenton and Mitchell; Sharkey and Sharkey; Schuzl et al.), embodiment is generally detached from other “dimensions” of the self, whether they are called mental, cognitive, psychological, social, spiritual, emotional or affective. This ambivalence broadly informs the categories that split older persons into physical, psychological and social dimensions. For instance, according to Sharkey and Sharkey “It seems reasonable to assume that there is shared human concern about the physical and psychological welfare of the elderly” (28). This dualistic notion of the body as a legacy of Cartesian dualism has long inspired anxiety. As Anker suggests, such assumptions about mind–body dualism easily permeate discussions of moral ethics and human rights. For instance, the concept of bodily integrity emphasises the importance of personal autonomy and self-determination over one’s own physical body (Nussbaum). Having been developed as an approach to global development and justice, the conceptualisation of human rights remains in a dualistic trap strongly emphasising the difference between the physical and psychological dimensions of human existence.

*Bodily integrity* has thereby become a predicate to human dignity, emphasising the liberal subject that must actively possess autonomous and self-enclosed embodiment (e.g., Nussbaum). While the notion of the physical body offers important baselines that lend force to many invaluable human rights protections, it nevertheless marshals a highly abstract, disembodied, idealised and anaemic vision of human selfhood. Anker proposes that the notion of the physical body is inadequate to prescribe how embodied subjects share their lives and intimacy with other living beings. This idealised body, moreover, finds an important corollary in a construct of the body that is both an independent and disconnected entity. Both the myth of the integrity of the

natural human body and the different “dimensions” of the human being are paradoxically consolidated by the spectre of nuclear and discrete bodies.

In gerontological research, the notion of the idealised body has, at least implicitly, been incorporated into the perception that the declining body constitutes the ontology of ageing (e.g., Tulle). Kittay and Feder argue that the emphasis on bodily ageing has resulted in a medical model that locates the source of disability in the individual and suggests that the individual is defective and needs fixing, although many times it is the social situation with which we should be concerned. However, biological and medical perceptions on aging have also been challenged in gerontological research (Kontos; Wainwright and Turner). Kontos proposes, “The body itself is an active, communicative agent, imbued with its own wisdom, intentionality, and purposefulness” (558). Kontos’s perception erases the mind–body split in a way that allows people with dementia to preserve agency. There are aspects of the lived body, such as being touched by others or being seen by others, that seem to be especially important to the wellbeing of older people (Routasalo and Isola). However, the right to be touched (non-sexually) by others is not explicitly addressed by human rights principles or moral ethics. *While bodily integrity* is mentioned frequently in reports on dignity, because of dualistic discourses, the right to be touched by others has been difficult to discuss in elderly care.

It is easy to slip into a dualistic framework when discussing issues of bodily integrity or bodily health, setting the physical/material body in opposition to either the mind or the self. When it comes to sensations and experience, phenomenological analytical methods can provide appropriate conceptual tools to identify the embodied subject and agent connected to other living bodies. Phenomenological research on interactive design during the past two decades has shown the potential value of understanding the role of tactile–kinaesthetic sensations in human–computer interactions (Parviainen et al.). This value, we argue, gives rise to considerations that must be weighed alongside the likely impact of the development of service robots and shared, embodied communications between people through touch, hearing and seeing. As Kittay proposes, being a person means having the capacity to develop and sustain contact with other persons, to shape one’s own world and the world of others and to have a life that another person can conceive of as an imaginative possibility (568). According to Turkle, our willingness to involve robots in the care of people with dementia may be explained by the fact that we do not recognise people with dementia as persons and robots as machines since both the demented and robots are incapable of putting themselves in the place of others (108).

### **3. The phenomenology of lived body and agency**

In an effort to move beyond this dualism, phenomenological theories of embodiment have emphasised the mental impact of bodily activities by using the terms “embodied self” and “embodied mind” (e.g., Varela et al.).

Merleau-Ponty famously speaks of the ambiguous nature of the body and argues that bodily existence is a “third category” beyond the merely physiological and psychological (Gallagher and Zahavi 153). This third category, the lived body, is neither spirit nor nature, neither soul nor body, neither inner nor outer. All of these counter-posed categories are derivations of something more basic. Phenomenologists deny that the body is a mere object, but the body can take itself as an object of exploration.

In trying to clarify the notion of the lived body, Husserl made a phenomenological distinction between the physical body (*Körper*) and the lived body (*Leib*) (107). Whereas the notion of *Leib* captures the body as the embodied first-person perspective, the *Körper* is an objectified, corporeal, material entity. The body as *Körper* is seen from an observer’s point of view, where the observer may be a scientist, a physician or the embodied subject himself/herself (Gallagher and Zahavi 154). Seemingly, public health discourses mainly focus on the physical body (*Körper*), consisting of bones, neural pathways, circulation, etc. For instance, fitness programs recommend that ageing people increase muscle strength, preserve bone density and improve balance because adults over 50 can lose around a half a pound of muscle mass every year. This discourse on the body is inherently dualistic, ignoring the notion of the lived body by focusing on the body as a mere material entity.

As stated above, phenomenologists consider that the lived body cannot be treated as a mere material object located in space. Therefore, lived bodies are not delineated by skin, as are our physical and material bodies. This is the point where the notion of bodily integrity becomes problematic since it does not necessarily consider the relevancy of the intimate space that is part of the lived body. Internal bodily sensations can be as intense as what people feel when their intimate space is invaded – feeling the presence as oppressive, freeing or inspiring. In the same way, touching the skin can be felt as pleasant or unpleasant, depending on the feelings in the intimate space. Touching is much more than physical contact between bodies; it can include various affective atmospheres such as an icy atmosphere when we feel chilly, an uncanny situation that makes our hair stand on end or a tense interpersonal climate that is felt as oppressive or suffocating (Fuchs 616). Touching has been found to be crucial for the wellbeing of elderly people (Bush). However, the importance of touching for elderly people is usually explained only in physiological terms, such as how touching can release the hormone oxytocin (Uvnäs-Moberg). Oxytocin is seen to have a potential physiological anti-stress effect by decreasing blood pressure and cortisol levels.

We assume that clarifying the notion of the lived body will allow for a more profound understanding of the agency of elderly people in the nurse–client relationship. The lived body is the agent that acts based on feelings and sensations of the body and affordances and restrictions produced by the environment. Despite the erosion their capacities for memory, people with dementia have an embodied way of “being-in-the-world”. It is important to see that, here, acting is more than just reacting to stimulus. Applying recent

theories of dementia, people with dementia provide a *reflective* response to situations, though their actions might be seen inappropriate and incorrect. Although most *people with dementia* undergo behavioural changes during the course of the disease, they have usually *creative* potential based on the circumstances of action (Joas). Reed-Danahay has challenged researchers to think of behaviours by people with dementia as reasonable responses to the environment rather than as pathological traits.

Despite the erosion of their memory capacities and other cognitive abilities, people who suffer from dementia still have the capability to communicate through gestures and touching. According to Langland and Panicussi, the more confused elderly people are, the more touch deprived they become. When gestures and touch are involved in communication, even the confused can usually understand different feelings and affects and experience pleasure or displeasure within care practices (Bush). Being treated as mere physical things by caregivers prevents them from communicating through lived bodies, increasing their sense of vulnerability. By ignoring their privacy needs and showing a lack of respect for their *Leib*, the elderly can be perceived as no more than physical things to be moved and fed. This may result in the elderly perceiving care as something that is done to them rather than done through mutual participation.

In developing practical nursing ethics in the context of service robots, we turn to Patricia Benner's seven moral sources and skills. Benner (7) suggests that nurses should 1) have relational skills in meeting older people in their particularity, 2) be able to recognise when a moral principle such as injustice is at stake, 3) have skilled know-how that allows for ethical comportment and action in particular encounters in a timely manner, 4) have moral deliberation and communication skills that allow for justification of and experiential learning about actions and decisions, 5) have an understanding of the goals and ends of good nursing practice, 6) participate in a community of practitioners that allows for character development and 7) have the capacity to love themselves and their neighbours and have the capacity to be loved. Interpreting Benner's list, it seems that the phenomenological notion of the lived body can be useful in several ways in understanding the role of interaction and communication skills in the context of care robots.

#### **4. Human-robot interaction and materialised morality**

Sharkey and Sharkey raise two main ethical concerns about the use of assistive robotcare for the elderly and its effects on their welfare: it might reduce the amount of human contact that the elderly have, and if used insensitively, it could increase the elderly's feelings of objectification and a lack of control over their lives (29). From a phenomenological perspective, we identify "objectification" as treating people as mere physical objects to be pushed, lifted, pumped or drained without proper reference to their lived bodies. For example, when a nurse showers a resident in a nursing home, the resident feels the temperature of the air and water on her skin as well as the

force the nurse uses while wiping her skin. The resident may sense the mood of the nurse and her attitude towards the task and the resident. The nurse can “read” the resident’s experiences from her gestures, postures and looks. The nurse may detect from a little tremble that the resident is not calm and adjust her actions. Also, the nurse experiences her own responses in the situation. The lived body binds us to a relational interplay through which we face the other body’s feelings and sensations, and at least for now, this goes far beyond what a robot can perceive. A robot might measure a resident’s skin temperature and pulse and react to these, but it cannot comprehend the overall situation from the resident’s viewpoint.

The bathing example shows that nurses are capable of *embodied practical wisdom*, but this does not mean that all nurses are sensitive about the lived bodies of residents. Caregivers with or without assistive robots can take care of physical bodies but ignore the lived bodies of clients, leading to reduced contact and increased objectification. However, in feeding, bathing, lifting or moving, robots can only monitor, feed and support physical bodies; they cannot take care of lived bodies. The worry is that the use of robots in elder care for tasks such as lifting, carrying or even cleaning might reduce the amount of human social contact that an elderly person experiences.

The embodied-care tasks for which the care robot will be used play a dominant role in the prioritisation and interpretation of values/moral elements in care. Once the robot enters a network, it will alter the distribution of responsibilities and roles within the network, as well as the manner in which the practice takes place. Verbeek refers to this hybrid between humans and technologies as a transforming mode. When technologies are used, they shape human actions and perceptions, creating new practices and ways of living. Verbeek argues that engineers “materialise morality” (369). For that reason, as van Wynsberghe puts it, a roboethic should address the shift in responsibilities that occurs after robots have been included in a socio-technical network, such as integrating them into care practices in hospitals and care homes.

Medical technologies have often been considered extensions of the nurse’s body, but in the context of service robotics, the robot can be seen as a technological medium between the nurse and the client. Van Wynsberghe suggests that the nurse’s role is to incorporate the use of technology in a variety of ways, from the mechanical bed to heart monitoring devices. However, technological media can alienate nurses from embodied resonance and awareness in felt contact with clients, when new technologies re-shape *skills* in *nursing practice*. In this understanding, the presence of the technology might decrease their use of social-emotional skills. We assume that the phenomenological approach within the lived body could open up a more positive perspective on materialising morality. If the designers of assisting robots can take into account the needs of lived bodies in “smart” technological solutions, nurses could embody caring practices within robotics without losing their expertise and abilities in using relational skills. This process might empower nursing practice and advocacy for those who are

vulnerable.

We assume that the phenomenological attitude in designing robotics is possible; it is too early to say whether it is likely. By using assistive “smart” robotics for lifting, carrying and even cleaning, nurses and caregivers could focus on embodied social interactions with their clients while robotics do the labour. While the robot takes care of the hard physical work, the nurse can touch the client, supporting her/his movements during the lifting or carrying operation. These types of embodied social contacts could have a positive influence on the wellbeing of aging people. When using autonomous assistant robots in home settings or in care homes, it is necessary to understand that robots can take care of some actions, but they are unable to care (Turkle). Some aspects of human nursing care may be regimented and scripted into machine-like performances that are suitable for robots, but transmitting affective touch within movements is not one of them.

## 5. Care triangle

As we have stressed throughout the paper, from a phenomenological perspective, care ethics is closely connected to good care practice and embodied practical wisdom in human care. The design of autonomous robots in home settings or in care homes is usually based on a vision of a task rather than a practice (Turkle). In terms of this narrow notion of care, lifting is just an action that needs to be done to move to the next action. The value of efficiency is the top priority. Autonomous robots can be designed for simple tasks, but they cannot replace embodied practices in socially complex environments. Turkle and van Wynsberghe claim that embodied practices in human care always require a reciprocal interaction between the care-receiver and caregiver. Instead of focusing merely on the nurse–patient relationship, we assume that an ethical evaluation of care robots is needed to identify the third part of the interaction: robotics.

We call our approach to using assistive robotics a “care triangle”, which captures the idea of “human-robot-human interaction”. The notion of a care triangle identifies the different roles of the caregiver, care receiver and robot in care praxis. In the middle of this care triangle there are embodied practices such as lifting, bathing, feeding, fetching items and delivering medications/food/sheets to the room or to the nurse, as well as personal communication, social interaction, and games and activities such as singing songs or painting. In clarifying the understanding of embodied care practices, we use as an example assistive robots used to lift and move people. When a resident is lifted by a nurse, this is one of the more vulnerable moments for the client. The client trusts the nurse, and through this action a bond is formed and/or strengthened that reinforces the relationship between the client and the nurse. As with the example of bathing, the significance of this action is found not in its physical movements but in its relational interplay between the lived bodies. Lifting a client requires the attentiveness of a nurse determining when and to what degree touch is necessary (van Wynsberghe



417).

Assistive robotics should not decrease possibilities for affective touch but, on the contrary, offer more significant focus on embodied praxis and how it “materialises morality”. When technologies are implemented for lifting tasks, this can have the effect of reducing the clients’ self-respect or making them feel humiliated. Increased use of assistive robots, in general, could lead to a reduced number of human interactions, but it also could increase older people’s opportunities for social interaction and affiliation with others. The reason for this has to do with understanding how embodied practices of human care are manifested in robot–human interactions. This also means that the robot is not designed to replace the human completely and is evaluated for how it enables humans in the performance of their practice. Facial expressions, tones of voice, gestures and postures allow persons to read one another’s responses and feelings and should also be a major component of ethics in the care triangle.

As mentioned above, the touch involved in care practices transmits complex information about emotions and affects, creating a value-laden milieu (Turkle). In the context of the care triangle, robotics is characterised as an interpersonal intervention that can develop a partnership and reciprocity in the nurse–client relationship. Benner emphasises that the nursing praxis is concerned with nurturing insightful, helping relationships that depend on meeting the particular “other” in particular contexts (13). The moral judgment of nurses is inherently part of everyday care and embodied contact with clients. Taking into account the capacities of the client and the situation, nurses have to make practical judgments about the clients’ needs while respecting their autonomy. In Benner’s words, “nurses are the patient’s front line of defence, and therefore must be knowledgeable and have character traits of assertiveness and openness, suited for critical thinking, effective patient advocacy, and for ongoing experimental learning” (13). Regarding the design of care robots, coproduction and experimental learning by nurses and clients, reflecting on their lived body, are highly important. To gain a new level of robotics requires ensuring that the perspective of lived body is taken seriously.

The notion of a care triangle captures the idea that robots are not a replacement for caregivers, but when they are designed to assist labour tasks including lifting and carrying, they can help nurses and clients achieve more profound, embodied interaction. Such robots could make elderly people feel that they have more *relational autonomy* in care practices. Relational approaches to autonomy grant that individuals’ actions are inevitably linked to the affordances of the agent’s environment (Christman). Even if people with dementia are highly dependent on human nursing care, they might benefit a great deal from relationships through their lived bodies, since they are unable to use cognitive coping strategies to adjust to age-based changes in functional abilities (Pirhonen and Pietilä).

## 6. Conclusions

Philosophical and empirical research that divides body and mind is not enough to provide a clear picture of how the elderly encounter robots and the effect of this interaction on their everyday lives. In this paper, we have suggested that a phenomenological approach is needed to understand embodied interaction between older people and robotics. The contribution of the present paper lies in its identification of the role of the lived body within the context and ethics of using robots in eldercare. In this research area, few previous studies have raised similar ethical concerns regarding embodiment or focused on the development of eldercare robots.

Identifying the significance of embodiment in ethical concerns associated with the use of robots in eldercare is a necessary first step toward ensuring that ethical discussions appreciate senior persons' lived bodies rather than merely discuss their physical healthcare or psychological conditions. More research is needed to examine how service robots will change nurses' working conditions and their care for the elderly. However, for now, we come to the conclusion that robots need not have a negative effect on dignity; instead, they can promote social relations and help caregivers and clients find a more profound, embodied connection.

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